

APC Project Routing Models

- Excel Spreadsheet based – no macros
- Utilizes the Elevation / Volume table
- Utilizes current flood control procedures
- Utilizes current operational limits

Why Not ResSim?

➤ Timeliness

- HEC-ResSim currently being converted to hourly model however will likely not be complete within the timeframe of this process

➤ Accepted

- Spreadsheets used for the Coosa relicensing process due to lack of ACT model in HEC-ResSim as well as lack of model ability to capture surcharge operations during that timeframe

Current Martin Flood Control Guidelines Pre-Turbine Upgrades

Rule	Condition	Outflow	Operation
1	Above Normal Operating elev 480-485	9,600cfs	When the reservoir is above the prevailing normal operating range and between elevations 480 and 485, turbines at Martin Dam will be operated to provide for a continuous outflow from Thurlow Dam of at least the equivalent of the hydraulic capacity of the turbines at Yates Dam, 9600 cfs.
2	Above Normal Operating elev 485-488	11,000cfs	When the reservoir is above the prevailing normal operating range and between elevations 485 and 488, turbines at Martin Dam will be operated to provide for a continuous outflow from Thurlow Dam of at least the equivalent of the hydraulic capacity of the turbines at that dam, 11,000 cfs.
3	Above Flood Control Guide-Line and elev. 488.	Up to Plant capacity, including spillway capacity.	When the reservoir is above the Flood Control Guideline and above elevation 488, turbines at Martin Dam will be operated as in 2 above and further, if required to avoid rising above elevation 490.0, will be operated to provide an outflow from Martin Reservoir at least equivalent to all turbine units available operating at full gate and gates will be raised so that the reservoir will not exceed elevation 490.0 except after all gates are raised and inflow exceeds gate capacity. At elevation 490.0, the spillway will have a discharge capacity of 133,000 cfs.
4	SPECIAL NOTE		During periods when inflow to the reservoirs on the Tallapoosa River exceeds the water capacities of hydraulic turbines, rates of outflow from the reservoirs shall not exceed concurrent rates of inflow except to evacuate accumulated surcharge storage subsequent to the time of peak inflow.

Martin Rule Curve Study Post Turbine Upgrades

➤ General Assumptions

- Martin Turbine Capacity = 16,500 (based on upgrades completed in 2004)
- Yates Turbine Capacity = 12,400
- Thurlow Turbine Capacity = 13,200
- 20 spillway gates
- Ability to open 2 spillway gates an hour

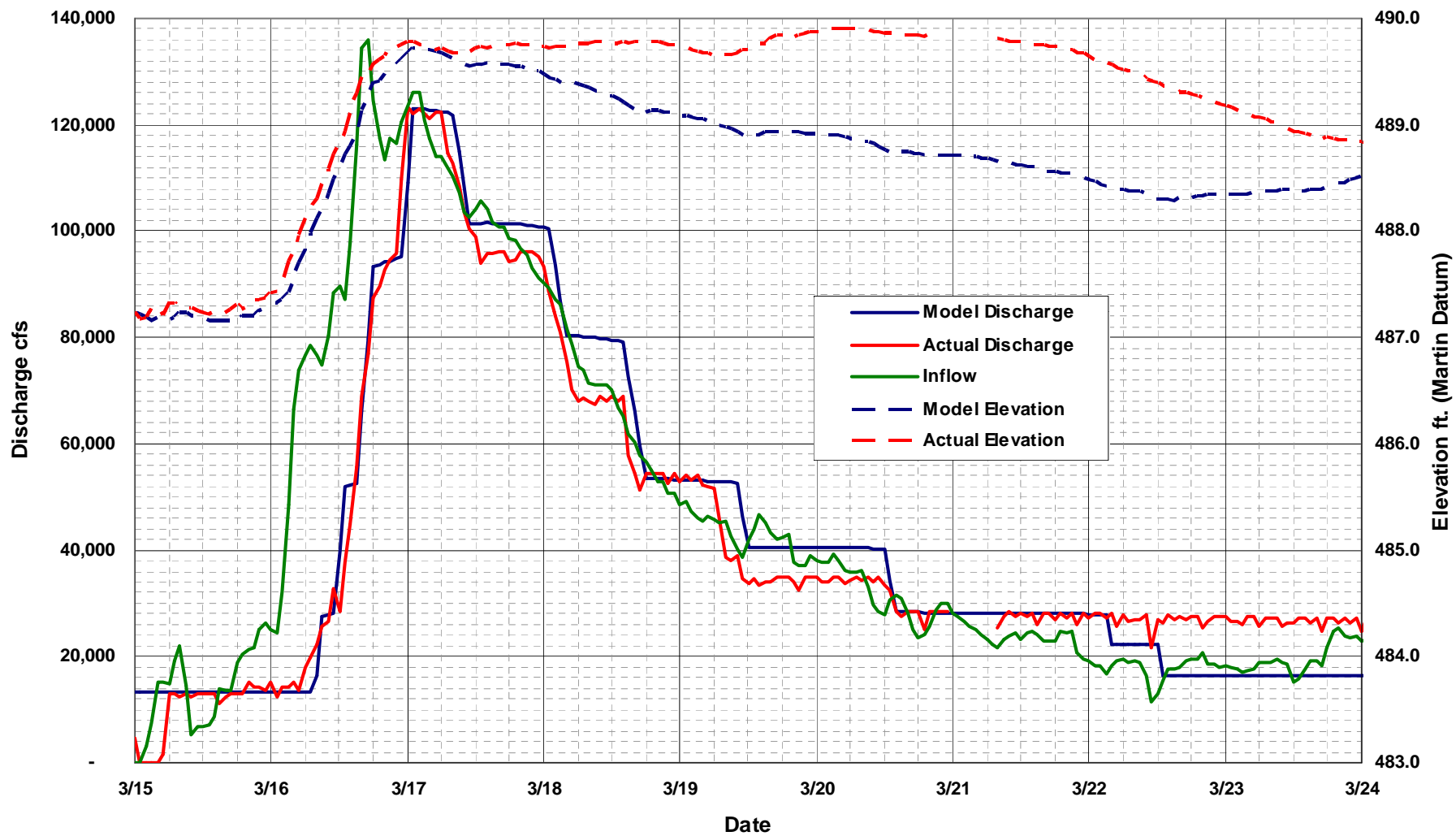
Model Calibration

- Match rising limb and peak discharge by following flood rules
- Match peak flood elevation
 - Open gates based on ability to open 2 per hour
 - Decision to open gates based on either change in pool elevation or change in inflow per time step

Model Calibration

- Currently the rules are flexible as to how fast Martin should be drawn down after a flood event
 - Put in reasonable rules for when gates would be shut; however, in real-time operations this will be dependent upon basin conditions
 - Currently based on look back change in elevation, allowed to close gates 1 per hour

Martin Reservoir Model Calibration



Model Demonstration